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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,455	02/06/2004	Lie-Fen Shyur	08919-111001 / 14A-890529	3601
69713 7590 06/30/2008 OCCHIUTI ROHLICEK & TSAO, LLP 10 FAWCETT STREET CAMBRIDGE, MA 02138			EXAMINER PAK, YONG D	
			ART UNIT 1652	PAPER NUMBER
			NOTIFICATION DATE 06/30/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

INFO@ORTPATENT.COM

<b>Office Action Summary</b>	<b>Application No.</b> 10/773,455	<b>Applicant(s)</b> SHYUR ET AL.	
	<b>Examiner</b> Yong D. Pak	<b>Art Unit</b> 1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-10,13-17 and 19-29 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,6,7,9,10,13-17 and 19-28 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 and 12 is/are allowed.
- 6) ☒ Claim(s) 1,8 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This application is a continuation in part of 09/654,652, now issued as US Patent No. 7,037,696.

The amendment filed on March 24, 2008, amending claims 1, 5, 12, and 29 and canceling claims 4, 11, and 18, has been entered.

Claims 1-3, 5-10, 13-17 and 19-29 are pending. Claims 2-3, 6-7, 9-10, 13-17, and 19-28 are withdrawn. Claims 1, 5, 8, 12 and 29 are under consideration.

### ***Response to Arguments***

Applicant's amendment and arguments filed on March 24, 2008, have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

### ***Objections to the Specification***

In view of the amendment of the specification, the objection to the specification, for the recitation of trademarks, has been **withdrawn**.

This application is a contains sequence disclosure that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825. To be in compliance, applicants are required to identify nucleotide

sequences of at least 10 nucleotides and amino acid sequence of at least 4 amino acids in the specification by a proper sequence identifier, i.e. "SEQ ID NO:", see MPEP 2422.01). It is particularly noted that the sequences on page 6, for example, lack sequence identification numbers.

***Claim Rejections - 35 USC § 112 – 2<sup>nd</sup> paragraph***

In view of the amendment of claim 29, the rejection of claim 29 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been **withdrawn**.

***Claim Rejections - 35 USC § 112 – 1<sup>st</sup> paragraph***

In view of applicant's argument, the rejection of claims 1, 8 and 29 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, has been **withdrawn**.

***Claim Rejections - 35 USC § 103***

In view of applicant's arguments, the rejection of claims 1 and 8 under 35 U.S.C. 103(a) as being unpatentable over Teather et al. has been withdrawn.

Claims 1, 8, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schimming et al.

Claims 1, 8, and 29 are drawn to polypeptides comprising (A) the enzymatic catalytic domains of 1,3-1,4 $\beta$ -D-glucanase of SEQ ID NO:1 or (B) amino acids of SEQ ID NO:3 and 4, and excluding 78 carboxyl amino acids of SEQ ID NO:1, wherein said polypeptide has higher enzymatic activity than the wild type of 1,3-1,4 $\beta$ -D-glucanase of SEQ ID NO:1.

Schimming et al. (Eur. J. Biochem. 204, 13-19 (1992) – form PTO-1449) discloses a wild type 1,3-1,4 $\beta$ -D-glucanase from *Fibrobacter succinogenes* having 100% sequence identity to SEQ ID NO:1 of the instant invention (Figures 4 and 5 and full sequence which is referenced in Teather et al. - form PTO-1449). Schimming et al. discloses that said glucanase may have two catalytic domains, comprising of amino acids 28-89 and 90-251 as illustrated in Figures 4 and 5, and that a non-catalytic C-terminal region is separated from said catalytic region by a Pro-Ser rich region (page 16, right column). Said catalytic domain excludes carboxyl terminal 78 amino acid residues, but Schimming et al. has not isolated a fragment consisting of only the catalytic domain. Schimming et al. also discloses that the repeating Pro-Thr/Ser redomain in several  $\beta$ -1,3-1,4 glucanases may or may not be required for activity (page 18). With these teachings at hand, one having ordinary skill in the art would have recognized to

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carry out deletion analysis of the C-terminal region of the enzyme to define the essential amino acids necessary for enzymatic activity. Such mutagenic technique is known in the art and is also taught by Schimming et al. (page 18).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to make a fragment consisting of only the two catalytic domains (amino acids 28-251) of the 1,3-1,4 $\beta$ -D-glucanase *F. succinogenes* or systematically delete amino acid residues at the C-terminal region of the 1,3-1,4 $\beta$ -D-glucanase *F. succinogenes* up to the catalytic domain (amino acid 251), and additionally glycosylate the fragment/polypeptide. One of ordinary skill in the art would have been motivated to make a fragment consisting of only the two catalytic domains taught by Schimming et al. in order to verify if amino acids 28-251 is the catalytic domain and one of ordinary skill in the art would have been motivated to delete C-terminal amino acids in order to determine those sequences that are required for activity or proper folding of the enzyme. One of ordinary skill in the art would have had a reasonable expectation of success since Schimming et al. teaches a possible catalytic domain and mutagenesis is a well known technique in the art. The property of having higher enzymatic activity compared to the wild type enzyme would flow naturally upon deleting 78-84 C-terminal residues and therefore said property is inherent to a polypeptide wherein its 78-84 C-terminal residues have been removed.

Therefore, the reference of Schimming et al. render claims 1, 8, and 29 *prima facie* obvious to those skilled in the art.

***Conclusion***

Claims 1, 8, and 29 are rejected.

Claims 5 and 12 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Pak whose telephone number is 571-272-0935. The examiner can normally be reached 6:30 A.M. to 5:00 P.M. Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nashaat Nashed can be reached on 571-272-0934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Yong D Pak/  
Primary Examiner, Art Unit 1652

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